

MARTIN ENGLER,  
EDMUND FOEHR and  
WALTER SCHUMACHER-RUF  
Serial No.: 10/539,305

IN THE CLAIMS:

Please amend claims 1-28 and add new claims 29-36 as indicated in the following Listing of Claims.

LISTING OF CLAIMS

- 1 1. (Currently amended) An antifriction bearing with integrated lubricating material for lubricating parts that move relative to each other, in particular with a respective inner ring that exhibits a running path and an outer ring, between which rolling bodies, in particular bearing balls, are arranged, ~~characterized in that~~ wherein the improvement comprises at least a part of the surface of at least one of the parts ~~exhibits~~ includes a coating (52, 53) of lubricant.
  
- 1 2. (Currently amended) The antifriction bearing according to Claim 1, ~~characterized in that~~ wherein one of the parts is a high pressure ball bearing having  $n \cdot D_m \geq 1$  mill. ( $n$  = speed

MARTIN ENGLER,  
EDMUND FOEHR and  
WALTER SCHUMACHER-RUF  
Serial No.: 10/539,305

1 [RPM],  $D_m$  = reference circle [mm]).

1 3. (Currently amended) The antifriction bearing according to  
2 Claim 1 or 2, ~~characterized in that~~ wherein the lubricant is  
3 ~~designed in such a way as to be~~ conveyed from the part  
4 carrying the coating to ~~the~~ an uncoated part as the parts  
5 move.

1 4. (Currently amended) The antifriction bearing according to  
2 ~~one of~~ Claim 1 or 3, ~~characterized in that~~ 2 wherein the  
3 lubricant and ~~the~~ a counter-surface (57) of ~~the~~ an uncoated  
4 part (54) are designed ~~in~~ such a way that the lubricant  
5 adheres to ~~the~~ a counter-surface of the uncoated part (54).

1 5. (Currently amended) The antifriction bearing according to  
2 ~~one of~~ ~~Claims 1 to 4, characterized in that~~ Claim 1 wherein  
3 the coating exhibits a varying composition (52a, 52b, 53,  
4 42, 43, 44) from ~~the~~ a side of ~~the~~ a component to be coated

MARTIN ENGLER,  
EDMUND FOEHR and  
WALTER SCHUMACHER-RUF  
Serial No.: 10/539,305

1 toward ~~the~~ a free surface.

1 6. (Currently amended) The antifriction bearing according to  
2 ~~one of the preceding claims, characterized in that the Claim~~  
3 ~~1 wherein~~ an amount of lubricant on ~~the~~ a free surface of  
4 the coating (55) is increased with respect to the side of  
5 the component to be coated.

1 7. (Currently amended) The antifriction bearing according to  
2 ~~one of Claims 1 to 6, characterized in that Claim 1 wherein~~  
3 the coating ~~encompasses~~ includes at least a carrier layer  
4 (52a, 42) ~~connected with~~ on the surface of the coated part,  
5 and at least one lubricant layer (53, 43, 44).

1 8. (Currently amended) The antifriction bearing according to  
2 ~~one of Claims 1 to 7, characterized in that Claim 1 wherein~~  
3 the lubricant from the coating (53, 44) is a solid  
4 lubricant.

MARTIN ENGLER,  
EDMUND FOEHR and  
WALTER SCHUMACHER-RUF  
Serial No.: 10/539,305

1 9. (Currently amended) The antifriction bearing according to  
2 ~~one of Claims 1 to 8, characterized in that Claim 1 wherein~~  
3 the lubricant has constituents incorporated into the coating  
4 (53, 44) that assume a liquid state during operation.

1 10. (Currently amended) The antifriction bearing according to  
2 ~~one of Claims 1 to 9, characterized in that Claim 1 wherein~~  
3 the coating (53, 44) ~~encompasses~~ includes a metal-doped,  
4 diamond-like carbon layer DCL.

1 11. (Currently amended) The antifriction bearing according to  
2 ~~one of Claims 1 to 10, characterized in that Claim 1 wherein~~  
3 the coating ~~encompasses~~ includes a single or multi-sheet  
4 polymer layer (42, 43, 44).

MARTIN ENGLER,  
EDMUND FOEHR and  
WALTER SCHUMACHER-RUF  
Serial No.: 10/539,305

1 12. (Currently amended) The antifriction bearing according to  
2 ~~one of Claims 1 to 11, characterized in that the Claim 1~~  
3 ~~further comprising a metallic carrier layer (42, 52a) is~~  
4 ~~metallic.~~

1 13. (Currently amended) The antifriction bearing according to  
2 ~~one of Claims 1 to 12, characterized in that the entire~~  
3 ~~Claim 1 wherein the~~ coating has additional functional layers  
4 (52a, 52b, 42, 43), of which one is pressure-stabilizing.

1 14. (Currently amended) The antifriction bearing according to  
2 ~~one of Claims 1 to 13, characterized in that Claim 1 wherein~~  
3 one or more layers of the coating have internal dampening.

1 15. (Currently amended) The antifriction bearing according to  
2 ~~one of Claims 1 to 14, characterized in that the Claim 1~~  
3 ~~wherein~~ electrical resistance of the coating is altered by

MARTIN ENGLER,  
EDMUND FOEHR and  
WALTER SCHUMACHER-RUF  
Serial No.: 10/539,305

1 16. (Currently amended) The antifriction bearing according to  
2 ~~one of Claims 1 to 15, characterized in that one Claim 1~~  
3 ~~wherein said coating includes several layers and one of the~~  
4 several layers has an electrically insulating effect.

1 17. (Currently amended) The antifriction bearing according to  
2 ~~one of Claims 1 to 16, characterized in that Claim 1 wherein~~  
3 the coating differs visually from the ~~basic substrate~~  
4 material (51, 41).

1 18. (Currently amended) The antifriction bearing according to  
2 ~~Claim 17, characterized in that the Claim 1 wherein~~ visual  
3 properties of the coating are altered by wear.

1 19. (Currently amended) The antifriction bearing according to

MARTIN ENGLER,  
EDMUND FOEHR and  
WALTER SCHUMACHER-RUF  
Serial No.: 10/539,305

1       ~~one of Claims 1 to 18, characterized in that Claim 1 wherein~~  
2       the coating causes the surface hardness of the coating to  
3       decrease or remain unchanged.

1 20. (Currently amended) The antifriction bearing according to  
2       ~~one of Claims 1 to 19, characterized in that Claim 1 wherein~~  
3       at least one component of an antifriction bearing is  
4       provided with a corresponding coating.

1 21. (Currently amended) The antifriction bearing according to  
2       ~~one of Claims 1 to 20, characterized in that Claim 1 wherein~~  
3       at least one component of a sliding bearing is provided with  
4       a coating.

1 22. (Currently amended) The antifriction bearing according to  
2       ~~one of Claims 1 to 21, characterized in that Claim 1 wherein~~  
3       an additional lubricant is provided exclusively on the  
4       contacting surfaces of the parts.

MARTIN ENGLER,  
EDMUND FOEHR and  
WALTER SCHUMACHER-RUF  
Serial No.: 10/539,305

1 23. (Currently amended) The antifriction bearing according to  
2 ~~one of Claims 1 to 22, characterized in that Claim 22~~  
3 wherein the additional lubricant has high adhesive and  
4 cohesive forces.

1 24. (Currently amended) The antifriction bearing according to  
2 ~~one of Claims 1 to 23, characterized in that Claim 1 wherein~~  
3 an additional, second unbound lubricant is present.

1 25. (Currently amended) The antifriction bearing according to  
2 ~~one of Claims 1 to 24, characterized in that Claim 1 wherein~~  
3 the lubricant is designed as a carrier for the lubricant(s).

1 26. (Currently amended) The antifriction bearing according to  
2 ~~one of Claims 1 to 25, characterized in that Claim 1 wherein~~  
3 the coating and/or the additional lubricants can be  
4 sterilized.

MARTIN ENGLER,  
EDMUND FOEHR and  
WALTER SCHUMACHER-RUF  
Serial No.: 10/539,305

1 27. (Currently amended) The antifriction bearing according to  
2 ~~one of Claims 1 to 26, characterized in that Claim 1 wherein~~  
3 the lubricant of the coating (53, 44) and/or the additional  
4 lubricant are ~~selected in such a way as to be compatible~~  
5 with a prior art lubricant according to prior art.

1 28. (Currently amended) The antifriction bearing according to  
2 ~~one of Claims 1 to 27, characterized in that the lubricants~~  
3 ~~consist Claim 1 wherein the lubricant consists~~ of several  
4 layers.

1 29. (New) A self lubricating antifriction device comprising:  
2 (a) a first uncoated substrate material forming a  
3 bearing, a ball, a roller or a bearing cage;  
4 (b) a second coated substrate material forming a  
5 bearing, a ball, a roller or a bearing cage disposed at an  
6 operable distance from said first uncoated substrate

MARTIN ENGLER,  
EDMUND FOEHR and  
WALTER SCHUMACHER-RUF  
Serial No.: 10/539,305

1 material; and

2 (c) a dry lubricating functional coating disposed on  
3 said second coated part to form said second coated substrate  
4 material and to lubricate said first uncoated substrate  
5 material and said second coated substrate material.

1 30. (New) The self lubricating antifriction device of claim 29  
2 wherein said dry lubricating functional coating is a  
3 lamellar form of modified tungsten disulfide.

1 31. (New) The self lubricating antifriction device of claim 29  
2 wherein said dry lubricating layer is a metal-doped diamond-  
3 like carbon layer (DCL).

1 32. (New) The self lubricating antifriction device of claim 29  
2 wherein said dry lubricating layer is PTFE.

MARTIN ENGLER,  
EDMUND FOEHR and  
WALTER SCHUMACHER-RUF  
Serial No.: 10/539,305

1 33. (New) The self lubricating antifriction device of claim 29  
2 further comprising an intermediate layer disposed between  
3 said second coated substrate material and said dry  
4 lubricating functional coating.

1 34. (New) The self lubricating antifriction device of claim 33  
2 wherein said intermediate layer is a chrome layer.

1 35. (New) The self lubricating antifriction device of claim 34  
2 wherein said chrome layer includes at least one lamellar  
3 WC/C layer.

1 36. (New) A self lubricating antifriction bearing apparatus  
2 comprising:  
3 (a) a bearing having an inner ring, an outer ring and  
4 bearings disposed intermediate said inner ring and said  
5 outer ring;  
6 (b) a dry lubricating coating disposed on at least one

MARTIN ENGLER,  
EDMUND FOEHR and  
WALTER SCHUMACHER-RUF  
Serial No.: 10/539,305

1 part of said inner ring, said outer ring or said bearings to  
2 form a functional layer for supplying lubricant to remaining  
3 parts of said inner ring, said outer ring and said bearings;  
4 and

5 (c) an intermediate layer comprising a transitional  
6 layer or a support layer disposed intermediate said dry  
7 lubricating coating and said at least one part of said inner  
8 ring, said outer ring or said bearing wherein said  
9 functional layer and said intermediate layer have a combined  
10 coating thickness of about 1 to 10  $\mu\text{m}$ .